OVERALL EXPECTATIONS

By the end of Kindergarten, children will:

A. demonstrate an understanding of number, using concrete materials to explore and investigate counting, quantity, and number relationships;

B. measure and compare length, mass, capacity, area, temperature of objects/materials, and the passage of time, using non-standard units, through free exploration, focused exploration, and guided activity;

C. describe, sort, classify, and compare two-dimensional shapes and three-dimensional figures, and describe the location and movement of objects through investigation;

D. explore, recognize, describe, and create patterns, using a variety of materials in different contexts;

E. sort, classify, and display a variety of concrete objects, collect data, begin to read and describe displays of data, and begin to explore the concept of probability in everyday contexts.

SPECIFIC EXPECTATIONS

Number Sense and Numeration (Quantity Relationships; Counting; Operational Sense)

As children progress through the Kindergarten years, they:

1. investigate the idea that quantity is greater when counting forwards and less when counting backwards (e.g., use manipulatives to create a quantity number line; move along a number line; move around on a hundreds carpet; play simple games on number-line game boards; build a structure using blocks, and describe what happens as blocks are added or removed) **[A]***

Student Talk: ***Initially*** "This is getting bigger." "Every time I add a block, my building gets taller." ***Eventually*** "We need three more blocks to finish the base."

2. investigate some concepts of quantity through identifying and comparing sets with more, fewer, or the same number of objects *(e.g., find out which of two cups contains more or fewer beans, using counters; investigate the ideas of more, less, and the same, using five and ten frames; compare two sets of objects that have the same number of items, one set having the items spread out, and recognize that both sets have the same quantity [concept of conservation]; recognize that the last count represents the actual number of objects in the set [concept of cardinality]; compare five beans with five blocks, and recognize that the number 5 represents the same quantity regardless of the different materials [concept of abstraction])* **[A]**

Student Talk: "Let's count the cars. I have six and you have five. That means I have one more. Let's get another one so we can have the same." "You counted 35 buttons. I go even higher. I can count 40 buttons."

Sample Problems: "Let's find out how many marbles I can hold in my hand. How many do you think? Let's count and see. How many marbles can you hold in your hand? Let's count. Do you have more or less than me?"

3. recognize some quantities without having to count, using a variety of tools *(e.g., dominoes, dot plates, dice, number of fingers)* or strategies *(e.g., composing and decomposing numbers, subitizing)* **[A]**

Teacher Prompts: "How did you know it was five? How did you figure out how many?"

Student Responses: "I know it's five because it looks like the dice in my game." "It's five. I saw four red and one blue."

* The letters in boldface type that follow each specific expectation indicate the overall expectation(s) to which the specific expectation is linked.

4. begin to use information to estimate the number in a small set *(e.g., apply knowledge of quantity, use a common referent such as a five frame)* **[A]**

Student Talk: ***Initially*** "I think it will take three scoops to fill up the pail. …It took six." ***Eventually*** "I know that is not 100. A hundred is a lot and this is only a little bit." "I think there are more than five buttons because they wouldn't all fit on a five frame."

5. use, read, and represent whole numbers to 10 in a variety of meaningful contexts *(e.g., use a hundreds chart; use magnetic and sandpaper numerals; put the house number on a house built at the block centre; find and recognize numbers in the environment; use magnetic numerals to represent the number of objects in a set; write numerals on imaginary bills at the restaurant at the dramatic play centre)* **[A]**

Student Talk: ***Initially*** "I'm five years old. " ***Eventually*** (pointing to numbers in a book and reading them aloud to a classmate) "Five. There are five frogs on the log."

6. use ordinal numbers in a variety of everyday contexts *(e.g., line up toys and manipulatives, and identify the first, second, and so on; after reading a book, respond to the teacher's questions about who was the first or third person to come in the door; identify the first, seventh, or tenth person to arrive at school or in the group)* **[A]**

7. demonstrate an understanding of number relationships for numbers from 0 to 10, through investigation *(e.g., **initially:** show smaller quantities using anchors of five and ten, such as their fingers or manipulatives; **eventually:** show quantities to 10, using such tools as five and ten frames and manipulatives)* **[A]**

Student Talk: "I know there are seven counters because all of the ten frame is full except for three spaces." "I know there are seven counters because all of the five frame is full and there are two left over."

Teacher Prompts: "Show me 3 on a five frame." "How do you know that it is 3?" "What comes in 5's [e.g., fingers, toes]?"

8. investigate and develop strategies for composing and decomposing quantities to 10 *(e.g., use manipulatives or "shake and spill" activities; **initially:** to represent the quantity of 8, the child may first count from 1 through to 8 using his or her fingers; later, the child may put up one hand, count from 1 to 5 using each finger, pause, and then continue to count to 8 using three more fingers; **eventually:** the child may put up all five fingers of one hand at once and simply say "Five", then count on, using three more fingers and saying "Six, seven, eight. There are eight.")* **[A]**

Student Talk: "I only have three wheels for my car. I need one more to make four." "There are five people at the snow table but we only have three shovels. We need two more shovels."

9. explore different Canadian coins, using coin manipulatives *(e.g., role-play the purchasing of items at the store at the dramatic play centre; determine which coin will purchase more – a loonie or a quarter)* **[A]**

10. demonstrate understanding of the counting concepts of stable order (that is, the concept that the counting sequence is always the same – 1 is always followed by 2, 2 by 3, and so on) and of order irrelevance (that is, the concept that the number of objects in a set will be the same regardless of which object is used to begin the counting) **[A]**

11. begin to make use of one-to-one correspondence in counting objects and matching groups of objects *(e.g., one napkin for each of the people at the table)* **[A]**

Sample Problems: "I am meeting with three children. I wonder how many chairs I will need." "Show me how you know you need six cages for your lions."

Student Talk: "I counted five children. I need five pieces of apple, one for each child."

12. investigate addition and subtraction in everyday activities through the use of manipulatives *(e.g., interlocking cubes)*, visual models *(e.g., a number line, tally marks, a hundreds carpet)*, or oral exploration *(e.g., dramatizing of songs)* **[A]**

Grade 1: Number Sense and Numeration

Overall Expectations

By the end of Grade 1, students will:

- read, represent, compare, and order whole numbers to 50, and use concrete materials to investigate fractions and money amounts;
- demonstrate an understanding of magnitude by counting forward to 100 and backwards from 20;
- solve problems involving the addition and subtraction of single-digit whole numbers, using a variety of strategies.

Specific Expectations

Quantity Relationships

By the end of Grade 1, students will:

– represent, compare, and order whole numbers to 50, using a variety of tools (e.g., connecting cubes, ten frames, base ten materials, number lines, hundreds charts) and contexts (e.g., real-life experiences, number stories);

– read and print in words whole numbers to ten, using meaningful contexts (e.g., storybooks, posters);

– demonstrate, using concrete materials, the concept of conservation of number (e.g., 5 counters represent the number 5, regardless whether they are close together or far apart);

– relate numbers to the anchors of 5 and 10 (e.g., 7 is 2 more than 5 and 3 less than 10);

– identify and describe various coins (i.e., penny, nickel, dime, quarter, $1 coin, $2 coin), using coin manipulatives or drawings, and state their value (e.g., the value of a penny is one cent; the value of a toonie is two dollars);

– represent money amounts to 20¢, through investigation using coin manipulatives;

– estimate the number of objects in a set, and check by counting (e.g., "I guessed that there were 20 cubes in the pile. I counted them and there were only 17 cubes. 17 is close to 20.");

– compose and decompose numbers up to 20 in a variety of ways, using concrete materials (e.g., 7 can be decomposed using connecting cubes into 6 and 1, or 5 and 2, or 4 and 3);

– divide whole objects into parts and identify and describe, through investigation, equal-sized parts of the whole, using fractional names (e.g., halves; fourths or quarters).

Counting

By the end of Grade 1, students will:

– demonstrate, using concrete materials, the concept of one-to-one correspondence between number and objects when counting;

– count forward by 1's, 2's, 5's, and 10's to 100, using a variety of tools and strategies (e.g., move with steps; skip count on a number line; place counters on a hundreds chart; connect cubes to show equal groups; count groups of pennies, nickels, or dimes);

– count backwards by 1's from 20 and any number less than 20 (e.g., count backwards from 18 to 11), with and without the use of concrete materials and number lines;
– count backwards from 20 by 2's and 5's, using a variety of tools (e.g., number lines, hundreds charts);
– use ordinal numbers to thirty-first in meaningful contexts (e.g., identify the days of the month on a calendar).

Operational Sense

By the end of Grade 1, students will:

– solve a variety of problems involving the addition and subtraction of whole numbers to 20, using concrete materials and drawings (e.g., pictures, number lines) (*Sample problem:* Miguel has 12 cookies. Seven cookies are chocolate. Use counters to determine how many cookies are not chocolate.);
– solve problems involving the addition and subtraction of single-digit whole numbers, using a variety of mental strategies (e.g., one more than, one less than, counting on, counting back, doubles);
– add and subtract money amounts to 10¢, using coin manipulatives and drawings.

Grade 2: Number Sense and Numeration

Overall Expectations

By the end of Grade 2, students will:

- read, represent, compare, and order whole numbers to 100, and use concrete materials to represent fractions and money amounts to 100¢;
- demonstrate an understanding of magnitude by counting forward to 200 and backwards from 50, using multiples of various numbers as starting points;
- solve problems involving the addition and subtraction of one- and two-digit whole numbers, using a variety of strategies, and investigate multiplication and division.

Specific Expectations

Quantity Relationships

By the end of Grade 2, students will:

– represent, compare, and order whole numbers to 100, including money amounts to 100¢, using a variety of tools (e.g., ten frames, base ten materials, coin manipulatives, number lines, hundreds charts and hundreds carpets);

– read and print in words whole numbers to twenty, using meaningful contexts (e.g., storybooks, posters, signs);

– compose and decompose two-digit numbers in a variety of ways, using concrete materials (e.g., place 42 counters on ten frames to show 4 tens and 2 ones; compose 37¢ using one quarter, one dime, and two pennies) (*Sample problem:* Use base ten blocks to show 60 in different ways.);

– determine, using concrete materials, the ten that is nearest to a given two-digit number, and justify the answer (e.g., use counters on ten frames to determine that 47 is closer to 50 than to 40);

– determine, through investigation using concrete materials, the relationship between the number of fractional parts of a whole and the size of the fractional parts (e.g., a paper plate divided into fourths has larger parts than a paper plate divided into eighths) (*Sample problem:* Use paper squares to show which is bigger, one half of a square or one fourth of a square.);

– regroup fractional parts into wholes, using concrete materials (e.g., combine nine fourths to form two wholes and one fourth);

– compare fractions using concrete materials, without using standard fractional notation (e.g., use fraction pieces to show that three fourths are bigger than one half, but smaller than one whole);

– estimate, count, and represent (using the ¢ symbol) the value of a collection of coins with a maximum value of one dollar.

Counting

By the end of Grade 2, students will:

– count forward by 1's, 2's, 5's, 10's, and 25's to 200, using number lines and hundreds charts, starting from multiples of 1, 2, 5, and 10 (e.g., count by 5's from 15; count by 25's from 125);

– count backwards by 1's from 50 and any number less than 50, and count backwards by 10's from 100 and any number less than 100, using number lines and hundreds charts (*Sample problem:* Count backwards from 87 on a hundreds carpet, and describe any patterns you see.);

– locate whole numbers to 100 on a number line and on a partial number line (e.g., locate 37 on a partial number line that goes from 34 to 41).

Operational Sense

By the end of Grade 2, students will:

– solve problems involving the addition and subtraction of whole numbers to 18, using a variety of mental strategies (e.g., "To add 6 + 8, I could double 6 and get 12 and then add 2 more to get 14.");

– describe relationships between quantities by using whole-number addition and subtraction (e.g., "If you ate 7 grapes and I ate 12 grapes, I can say that I ate 5 more grapes than you did, or you ate 5 fewer grapes than I did.");

– represent and explain, through investigation using concrete materials and drawings, multiplication as the combining of equal groups (e.g., use counters to show that 3 groups of 2 is equal to 2 + 2 + 2 and to 3 x 2);

– represent and explain, through investigation using concrete materials and drawings, division as the sharing of a quantity equally (e.g., "I can share 12 carrot sticks equally among 4 friends by giving each person 3 carrot sticks.");

– solve problems involving the addition and subtraction of two-digit numbers, with and without regrouping, using concrete materials (e.g., base ten materials, counters), student-generated algorithms, and standard algorithms;

– add and subtract money amounts to 100¢, using a variety of tools (e.g., concrete materials, drawings) and strategies (e.g., counting on, estimating, representing using symbols).